authoritative. There are, by the way, a fair number of shared authorities between this and the Abrahams and Parsons volume, who must be judged, therefore, to be indispensible to collections on desert geomorphology. To them David Thomas has added some new and alternative voices. Potential purchasers will also find good coverage, for the new tome has 30, as against the 16 chapters in the first edition. The principal additions are the regional chapters, of which more below. Others, more welcome, include chapters on the role of vegetation in desert geomorphology (which is wider ranging than the treatments in the other books) and on dating techniques (which is much more specific). As they did in the first edition, buyers will find information on dust and extraterrestrial deserts here, which they found neither in Abrahams and Parsons nor in Cooke *et al*. The chapters on the movement of sediment by the wind in all these (and other recent) books show remarkable convergent evolution, but the one in this volume does move the story on considerably.

Even with this galaxy of authorities and novelties, does later publication guarantee more up-to-dateness? To judge from the percentages of references in the new volume dating from after the first edition in 1988, the answer is a qualified 'yes': the mean value per chapter is 32. The series, chapter by chapter, runs thus: 19; 54; 5; 32; 25; 16 (397 references!); 36; 2; 42; 51; 35; 23; 16; 27; 39; 52; 21; 20; 8; 33; 49; 25; 30; 50; 31; 18; 70; 49; 37; 40. Figures like these are a reflection of many things, the pattern of growth or decay in a subdiscipline among them. A pragmatic buyer whose interest was weathering, pediments or wind erosion, would see little advantage in choosing this volume over the first edition (and almost certainly, therefore, little advantage over the other tomes). However, if dating techniques are the focus, then this is the one to get.

The disadvantages of choosing this volume over the others are, nonetheless, many fewer than the advantages. It is not nearly as well illustrated as Abrahams and Parsons and probably not even as well as Cooke *et al*., many of whose figures it shares or borrows. There is less on wind geomorphology here than in Cooke *et al*., but more than in Abrahams and Parsons. All the volumes suffer from targetting too broad an audience, but this one suffers more from this than the others, some chapters being clearly aimed at undergraduates (at this extreme, being didactic, and cutting corners in the argument), while others are aimed at a research audience (at the other extreme, defensively over-referenced, and shorter on answers than questions). Both of the edited volumes under comparison are uneven in quality (by whatever standard), but this one, I believe, is less so than Abrahams and Parsons, which is to say that the high points are not as high and the low points not as low.

My main complaint is one of the crude criterion of size. In the interests of a more saleable, portable volume, the paperback version of which would be less likely to fall apart, I would not have added the regional chapters, for these will be the least read. I am also unsure of the need for second opinions in some areas: there is not just one essay each on weathering and channels, but two; and there is a chapter on overland flow processes in addition to one on badlands. Without these indulgences, we would have had a less formidable, lighter (and probably cheaper) book. And there are gaps that would have been better filled. Although there is a chapter on 'Desert soils', it concerns no more than surface conditions, and important as these are, there is much more to contemporary soil formation than this, even in a geomorphological context. (This lacuna also occurs in the Abrahams and Parsons book.) Like the other tomes, this one is weak on applied geomorphology; the main contribution in this area here comes under 'human impact', there being very little on management (for example of wind erosion). Finally, I would have consolidated the references (there is a formidable list of references that are common to many chapters, among which the competitor volumes and numerous other publications by Abrahams and Parsons are very prominent).

All said, I am very happy to have this volume on my shelves, and, more important, to have it in the library, ready for use by undergraduates to whom I will be referring many of its chapters as their first port of call.

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RAPID MASS MOVEMENT AS A SOURCE OF CLIMATIC EVIDENCE FOR THE HOLOCENE edited by J. A. Matthews, D. Brunsden, B. Frenzel, B. Gläser and M. M. Weiss, (editors), Gustav Fischer Verlag, Stuttgart, 1997. No. of pages: 444. ISBN 3-437-25388-3.

As edited conference proceedings go, this is an outstanding example of the 'genre'. The editorial team has provided a preface which defines clear objectives and a list of 20 questions that was addressed to authors; a summary of relevant results of the European Community EPOCH programme and a synthesis of unusual clarity. Given the complexity of the volume (32 substantive chapters including contributions from Austria, The Netherlands, Italy (4), Spain, Poland (3), U.K. (7), Hungary, Romania, Czech Republic, Germany (2), France, Switzerland, Sweden, Canada (2), Norway (2), New Zealand, Russia (2)), the editors deserve sincere congratulations. Not only is this book well-organized but it is also what it claims to be: a state-of-the-art statement on European research on the book's title theme, with some international flavour added to provide perspective. I found the book to be of absorbing interest.

The aim of the workshop, on which the book was based, was to evaluate the various types of rapid mass movement (including landslides, debris flows and snow avalanches) as a source of proxy climatic evidence for the European Holocene. The synthesis provided by Berrisford and Matthews summarizes the spatial and temporal patterns of landslides, debris flows and snow avalanches in Europe; discusses the nature of climatic controls on each of these three categories of rapid mass movement, provides a summary palaeoclimatic reconstruction based on supposed phases of enhanced activity of each process and compares Holocene rapid mass movement records with solifluction records and other climatic proxies.

They conclude that the Holocene records of rapid mass movements are of too variable a quality to produce a comprehensive summary for Europe though there is considerable potential for obtaining improved records and they detect an increase in all types of rapid mass movement activity since about 5000 years BP. They affirm that rapid mass movement data do contain climatic signals but that non-climatic factors blur that climatic signal. The fact that rapid mass movement records show correlation with the Holocene record of slow mass movement and glacier variations confirms in their minds the presence of a climatic signal.

This is indeed a compelling synthesis and may well encourage further funding of relevant and related research. In this reviewer's reading of the research data reported, there were several quite strikingly contrasted conceptual models on display.

The first major conceptual model is one which has been articulated most fluently by Starkel (1985). In this volume, he reaffirms his view that frequent mass movements coincide with phases of glacier advance, solifluction, lowering of treeline and combinations of intense rainfall events, continuous periods of rain and irregular rainy years. Nine of the other contributors to this volume subscribe to this general model and are, in general, optimistic about the possibility of detecting the climatic signal in mass movement events.

The second major conceptual model is one which involves a direct exploration of the climate–landslide coupling via hydrological and geomechanical threshold exceedance. Crozier provides an effective discussion of this model. Nine of the other contributors subscribe to this model and they are, in general, less optimistic about the possibility of detecting the climatic signal, though Jonasson *et al*., Kotarba and Baumgart-Kotarba and Crozier recommend close attention to lake sediments as a potential way forward.

Four authors make explicit use of the paraglacial model; this, after all, is a specific example of the broader conceptual model of theshold exceedance and relaxation time needed to recover from the effects of massive glaciation. Luckman and Fiske review this model and indicate the problem of elucidating a climatic signal if this model is more broadly representative.

There are two contributions on coastal mass movement events (Ibsen and Brunsden and Maquaire) and one contribution on snow avalanches (Laternser and Pfister) which are optimistic about detecting climatic signals – probably because of the directness of the relationship and the shorter relaxation times.

The remaining five chapters are generally pessimistic about detecting climatic signals for various reasons: the dominance of structural and tectonic controls (Mantovani and Kalvoda *et al*.), diametrically opposed interpretations of climatic influences on mudflow activity (Solomina) and basic agnoticism because of the complexity of the climate–hydrology–vegetation–soils–geomorphic process causal chain and urging an intensification of computer and laboratory modelling to improve our understanding before committing ourselves to chronologies and climatic inferences from mass movement events (Thornes and Brooks).

The key issue is presented by Ibsen and Brunsden: 'The actual number of dated slides is small and there is a danger that data will be selectively used if they happen to agree with our preconceived notions that a particular climate is conducive to slipping. In the U.K. archive there are several good records from the warm, dry Climate Optimum between 5500–3000 B.C. indicating that landsliding has, in fact been continuous in time and that the concentrations are imaginary' (p. 173).

This is a fine, stimulating research volume; my only concern is that the editorial team has done too good a job of sanitizing the data. There seems to be a fair division of opinion among the researchers over the wisdom of proceeding with this kind of exercise; the editors declare victory and will undoubtedly use the evidence of this volume to justify continuing the search for palaeoclimatic signals in this way. All geomorphologists will find this volume to be 'a good read'. The question for me is: 'Are the contributors to the research volume as convinced about the interpretability of their results as the editors?' At all events, the data have been compiled and all are agreed on the necessity for more. Should there not be a frank and open engagement of the supporters of the different models before the next request for funding to do more of the same thing?

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